

Claims

1. 1. Apparatus for cutting sheet materials consisting of predominantly mineral substances, such as laminated safety glass, to dimensions adjustable relative to a reference edge of the material, comprising a
5 frame mounting oppositely disposed cutting tools acting simultaneously on both major planes of the material, as well as elements both for guiding said apparatus along the reference edge of the material while cutting the same and for the universal handling of said apparatus
10 regardless of the local and/or geometric position of the material, characterized by the combination of the following features:

a) Frame (2) has a cutting head (3) and arms (2.1) in a bifurcated configuration of which the mutual
15 distance at the free ends is variable under tension;

b) The free ends of arms (2.1) have attached thereto cutting tools (3.1) forming the cutting head (3) and acting onto the material planes (5.1) to be cut by virtue of the bias exerted by arms (2.1);

20 c) Cutting tools (3.1) have associated therewith first guide rolls (3.1.1) of which the positions are variable relative to material planes (5.1);

d) one of said arms (2.1) has integrated therewith a guide rail (2.3) on which is mounted a
25 transverse element (4) adjustable and fixable in the longitudinal direction for setting the cutting distance from the reference edge; and

e) transverse element (4) has thereon a guide head (4.1) which straddles the reference edge of the material (5) to be cut, is guided by and along said reference edge and is biased against material (5) to
5 adjust to the thickness thereof, said transverse element (4) also including a handle (4.2) for the manipulation and the direct control of apparatus (1) by the user handling it.

2. Apparatus as in claim 1, characterized in that bifurcated arms (2.1) comprise a pair of U-shaped planar
10 elements (2.2) held at a mutual distance by connecting elements (2.4) to form a lightweight frame (2).

3. Apparatus as in claim 1 or 2, characterized in that cutting tools (3.1) at the free ends of arms (2.1)
15 comprise cutting wheels (3.1.2).

4. Apparatus as in any one of claims 1 to 3, characterized in that first guide rolls (3.1.1) maintain cutting tools (3.1) in positions suited, on the one hand, to provide an optimum guiding pressure relative to the
20 cutting planes and, on the other hand, to ensure a minimum required resistance for cutting.

5. Apparatus as in any one of claims 1 to 4, characterized in that cutting tools (3.1) secured at the free ends of arms (2.1) form constructionally similar parts
25 each comprising:

a) Supporting bodies (3.1.3) at least one of which is adjustable at the free end of an arm (2.1) in vertical position relative to the cutting plane;

b) Travelling bodies (3.1.4) secured to supporting body (3.1.3) and mounting first guide rolls (3.1.1) and cutting tools (3.1) positioned between said first
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guide rolls (3.1.1), with the mutual distance of supporting bodies (3.1.3) being variable at least by the resilient bias of arms (2.1),

5 c) A distance between first guide rolls (3.1.1) and cutting tool (3.1) (seen in a direction perpendicular to the plane of material (5)) which ensures a positive guiding pressure and the least required resistance for obtaining a proper cutting pressure.

10 6. Apparatus as in any one of claims 1 to 5, characterized that guide rail (2.3) has a scale or graduation (2.3.1) thereon.

15 7. Apparatus as in any one of claims 1 to 5, characterized in that guide head (4.1) has guide elements (4.1.1) with second and third guide rolls (4.1.2, 4.1.3), said guide elements corresponding to the reference edge and being adjustable towards each other and disposed on both cutting planes.

20 8. Apparatus as in any one of claims 1 to 7, characterized by handle (4.2) being provided on one of guide elements (4.1.1) to embrace one of arms (2.1).

9. Apparatus as in claims 1, 5 and 6, characterized by said first, second and third guide rolls (3.1.1, 4.1.2, 4.1.3) having wear-resistant and/or friction-reducing coatings at least on their races.

25 10. Apparatus as in any one of claims 1 to 10, characterized by

a) at least one of the constructional groupings and/or one of the component parts referred to hereinabove being designed to be replaceable and

b) at least frame (2) being variable in construction size by comprising sections not designated and shown.

11. Apparatus as in claim 7, characterized by the distance between guide elements (4.1.1) of guide head (4.1) being variable articulatedly against a force exerted by at least one spring element (not shown).

12. Apparatus as in claims 7 and 11, characterized by at least one guide element (4.1.1) being provided for movement on guide rail (2.3) as a component part of transverse element (4.1), said guide element also having the aforesaid handle (4.2).

13. Apparatus as in any one of claims 1 to 13, characterized in that, for setting the cutting distance from the reference edge of material (5) to be cut, transverse element 4, which is mounted on guide rail (2.3) in a manner to be adjustable and fixed in place,

a) is adapted to be fixed in position at a reference point by means not illustrated,

20 b) with cutting tools (3.1) adapted to perform arcuate cuts on material (5) by correspondingly manipulating and moving apparatus (1),

14. Apparatus as in any one of claims 1 to 13, characterized by

25 a) transverse element (4) and the reference edge of material (5) having therebetween guide-block-like inserts (not illustrated herein) of any curved shape and

b) apparatus (1) being manipulated and guided to cause cutting tools (3.1) to perform curved cuts on material (3) as guided by said blocks.

15. Apparatus as in any one of claims 1 to 14, characterized in that frame (2) has a cross-sectional shape tapering from its closed end to its front end forming the free ends of arms (2.1) accepting cutting head (3),
5 with the rear end of frame (2) being configured to form a second handle (not illustrated) for left- or right-handed manipulation.